

REMARKS

The Examiner is respectfully requested to reconsider the application in view of the following remarks.

35 U.S.C. § 103

Claims 1-5 and 7-22 are rejected under 35 U.S.C. § 103(a) as being obvious over Fuentes-Afflick. (U.S. 6,203,584). The rejection is respectfully traversed for the following reasons.

The invention relates to a certain additive concentrate, a gasoline composition containing such additive concentrate, method of preparing such gasoline composition, and a method of operating a spark-ignition internal combustion engine comprising introducing into the combustion chambers such gasoline composition. The additive concentrate comprises:

an oil soluble hydrocarbyl poly(oxyalkylene) aminocarbamate having a number average molecular weight (Mn) in the range 600 to 10,000 with at least one basic nitrogen atom wherein the hydrocarbyl substituent contains 1-30 carbon atoms; and

an oil soluble hydrocarbyl amine of formula $R-NH_2$ wherein R represents a group R' or a group $R'-CH_2-$, wherein R' represents a hydrocarbyl group having a number average molecular weight (Mn) in the range 750 to 6000

wherein the aminocarbamate and the amine have a weight ratio in the range of 6:1 to 1:6.

The claimed invention provides an additive concentrate that possesses advantageous storage stability characteristics. One important property for an additive concentrate to possess is storage stability over a broad range of temperatures, e.g. temperatures as low as $-20\text{ }^{\circ}\text{C}$ and as high as $40\text{ }^{\circ}\text{C}$, and yet have good engine performance as gasoline.

Applicants submit that the Examiner has not met the burden that the Supreme Court and the Federal Circuit places on the U.S. Patent and Trademark Office to establish *prima facie* obviousness. The ultimate determination of whether an invention is or is not obvious is a legal conclusion based on underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the prior art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 148 USPQ 459, 467 (1966); See *In Re Dembiczak*, 50 USPQ2d 1614 (Fed. Cir. 1999). To establish a *prima facie* basis for obviousness there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Secondly, there must be a reasonable

expectation of success. Further, the teaching or suggestion to make the claimed combination must be found in the prior art, and not based on applicant's disclosure.

The Fuentes-Afflick reference relates to fuel compositions containing (a) *at least one amine compound selected from the group consisting of* (1) a fuel-soluble aliphatic hydrocarbyl-substituted amine having at least one basic nitrogen atom where the hydrocarbyl group has a number average molecular weight of about 700 to 3,000 and (2) a poly(oxyalkylene)amine having at least one basic nitrogen atom and a sufficient number of oxyalkylene units to render the poly(oxyalkylene)amine soluble in hydrocarbons boiling in the gasoline range; and (b) an ester (see abstract). The preferred aliphatic hydrocarbyl-substituted amines are hydrocarbyl substituted polyalkylene polyamines having certain formula. (see column 7, lines 52-67). In contrast, applicants claim a particular combination of a certain oil soluble hydrocarbyl amine of formula $R-NH_2$ (monoamine) and an oil soluble hydrocarbyl poly(oxyalkylene) aminocarbamate.

The Examiner asserted that "it would have been obvious to one of ordinary skill in the art to have used both amines because Fuentes-Afflick teaches that at least one amine may be used in the composition, and this suggests that at least one amine may be used in the composition and this suggest that more than one amine could be present in the composition." This suggests the use of an "obvious to try" standard. The Court of Appeals for the Federal Circuit has stated that this is not the proper test for determining obviousness under § 103. A showing of obviousness requires a motivation or suggestion to combine or modify prior art references, coupled with a reasonable expectation of success. See, Brown & Williamson Tobacco Corp. v. Philip Morris Inc., 56 U.S.P.Q.2d 1456, 1459 (Fed. Cir. 2000). A general incentive does not make obvious a particular result. Here, applicants claims a particular combination of a hydrocarbyl monoamine and hydrocarbyl poly(oxyalkylene) aminocarbamate to obtain a storage stable composition.

There is no teaching or suggestion to modify the Fuentes-Afflick reference to obtain applicants particular composition as claimed. The purpose disclosed in Fuentes-Afflick is to provide a fuel that provides a significant reduction in friction and in the fuel consumption of an internal combustion engine. There is no suggestion as to how to obtain applicants' storage stable composition. Further, as can be seen from the Examples at Table 1 and Table 2 in the present application, not all combinations of an aliphatic hydrocarbyl-substituted amine and poly(oxyalkylene)amine will have sufficient stability to pass the stability test. The composition containing polyisobutylene ethylene diamine (PIB-EDA) failed in the stability test as can be seen in Comp. A-D in Table 1. Polyisobutylene ethylene diamine is listed as a preferred hydrocarbyl amine at column 4, lines 20-21 and used as in the Example as Amine B (column 14, line 59-60) in the Fuentes-Afflick reference. Thus, it is submitted that it is not obvious to a

person skilled in the art based on the disclosure of the Fuentes-Afflick reference to come up with the applicants' claimed composition that comprise a particular combination of a hydrocarbyl monoamine and hydrocarbyl poly(oxyalkylene) aminocarbamate to obtain a storage stable composition.

Claim 6 is rejected under 35 U.S.C. § 103(a) as being obvious over Fuentes-Afflick. (U.S. 6,203,584) and further in view of EP 0534,551. The rejection is respectfully traversed for the following reasons.

The additive concentrate of claim 6 is dependent on claim 1 and incorporates limitations recited in claim 1. Thus, the additive concentrate of claim 6 comprises:

an oil soluble hydrocarbyl poly(oxyalkylene) aminocarbamate having a number average molecular weight (Mn) in the range 600 to 10,000 with at least one basic nitrogen atom wherein the hydrocarbyl substituent contains 1-30 carbon atoms; and

an oil soluble hydrocarbyl amine of formula $R-NH_2$ wherein R represents a group R' or a group $R'-CH_2-$, wherein R' represents a hydrocarbyl group having a number average molecular weight (Mn) in the range 750 to 6000

wherein the aminocarbamate and the amine have a weight ratio in the range of 6:1 to 1:6; and an anti-corrosion additive.

As discussed above, the claimed invention provides an additive concentrate that possesses advantageous storage stability characteristics.

The EP 0534,551 reference relates to a gasoline composition comprising a major amount of a gasoline and from 5 ppmw to 1,000 ppmw based on the gasoline composition of a mixture of (a) an oil soluble polyamine selected from the group consisting of (i) an aliphatic alkylene polyamine containing at least one olefinic polymer chain attached to a nitrogen atom and/or a carbon atom of the alkylene radical(s) connecting the amino nitrogen atoms and said polyamine having a number average molecular weight in the range from 600 to 10,000, (ii) a Mannich polyamine comprising the condensation product of a high molecular weight sulphur-free alkyl-substituted hydroxyaromatic compound wherein the or each alkyl group has a number average molecular weight in the range from 600 to 10,000, an amine which contains an amino group having at least one active hydrogen atom, and an aldehyde, wherein the respective molar ratio of reactants is 1:0.1-10:0.1-10, and (iii) mixtures of (i) and (ii); and (b) an oil soluble hydrocarbyl poly(oxyalkylene) aminocarbamate having a number average molecular weight in the range from 600 to 10,000 having at least one basic nitrogen atom wherein said hydrocarbyl group contains from 1 to 30 carbon atoms, and wherein the weight ratio of said polyamine (a) to said hydrocarbyl poly(oxyalkylene) aminocarbamate (b) ranges from 3:1 to 1:2 (see page 2, lines 30-43). The EP reference disclose an anti-corrosion additive at page 7, lines 26-30.

However, the EP reference also does not disclose composition claimed by the applicants that comprise a particular combination of a hydrocarbyl monoamine and hydrocarbyl poly(oxy)ene aminocarbamate to obtain a storage stable composition.

As described at page 2, lines 7-16 of the present application, the aliphatic alkylene polyamines of type (a)(i) in the EP reference necessarily contain at least two amino nitrogen atoms. The general formula (I) for preferred polyamines as given on page 3 of the EP reference, provides for the polyamine to be a diamine when x in the formula is zero. Exemplified in EP-A-534551 is a composition comprising an N-polyisobutenyl-N'-N'-dimethyl-1,3-diamino propane having a molecular weight of 1050 (M_n). There is no mention in the EP reference of an aliphatic monoamine as claimed by the applicants.

Claims 1-5 and 7-22 are rejected under 35 U.S.C. § 103(a) as being obvious over WO 9112303. The rejection is respectfully traversed for the following reasons.

The invention as claimed is discussed above. WO91/12303 relates to a fuel additive composition comprising a hydrocarbon boiling in the gasoline or diesel range and about 400 to 1,200 parts per million of a fuel additive composition comprising:

- a) a dispersant comprising a hydrocarbyl poly(oxyalkylene) aminocarbamate having at least one basic nitrogen atom and an average molecular weight of about 1,000 to about 3,000;
- b) an injector detergent comprising a branched chain hydrocarbyl amine having at least one basic nitrogen atom and an average molecular weight of about 300 to about 700, wherein the hydrocarbyl moiety is derived from polymers of C_2 to C_6 olefins;
- c) a fuel demulsifier which is homogeneous with the other components of said fuel additive composition; and
- d) a natural or synthetic carrier fluid (see abstract).

In relation to the branched chain hydrocarbyl amine, on page 18, lines 6 to 8 or the WO reference, it is indicated that, in general, the branched-chain hydrocarbyl group will contain from about 20 to about 40 carbon atoms that corresponds to a hydrocarbyl group molecular weight range from about 280 to about 560. While the amino component of the branched chain hydrocarbyl amines may be either a monoamine or a polyamine, (page 18, lines 16 to 12), it is specifically stated that a particularly preferred branched-chain hydrocarbyl amine is polyisobutylene diamine (page 19, lines 1 and 2). Further, the WO reference teaches on page 10, lines 33-34 and page 11, lines 1-9, that the low molecular weight of the hydrocarbyl amine is required to obtain the surprising results of the invention, as well as to avoid precipitation problems.

By contrast, in the present application, the stability of a fuel additive is obtained by use of a hydrocarbyl monoamine with a molecular weight in the range of 750 to 3000 in combination with a hydrocarbyl poly(oxyalkylene) aminocarbamate as claimed.

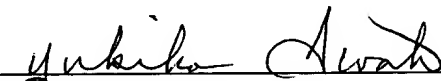
A polyisobutylene ethylene diamine prepared by the stepwise reaction of a C₃₀ polyisobutylene having a molecular weight of approximately 420 with chlorine and ethylene diamine is used as the hydrocarbyl amine injector detergent in the working example of the WO reference (page 23, lines 21 to 27). As discussed above, the composition containing polyisobutylene ethylene diamine (PIB-EDA) failed in the stability test as can be seen in the present application as Comp. A-D in Table 1. Applicants have discovered that a particular combination of a hydrocarbyl monoamine with a molecular weight in the range of 750 to 3000 in combination with a hydrocarbyl poly(oxyalkylene) aminocarbamate as claimed provide storage stability over a broad range of temperatures and yet have good engine performance as gasoline. Applicants solution is different than those taught by the WO that teaches that the use of a low molecular weight branched chain hydrocarbyl amine avoids a precipitation problem. The WO reference does not have any suggestion or motivation to modify to come up with applicants solution, much less with a reasonable expectation of success, to provide a storage stable additive concentrate with a particular combination of a hydrocarbyl monoamine with a molecular weight in the range of 750 to 3000 with a hydrocarbyl poly(oxyalkylene) aminocarbamate as claimed to provide storage stability over a broad range of temperatures and yet have good engine performance as gasoline. It is submitted that the Examiner has not met the burden to establish *prima facie* obviousness

Accordingly, Applicants respectfully request withdrawal of the 103 rejection.

The Examiner is respectfully requested to reexamine the claims and pass the case to issue. If it would be considered helpful in resolving any issues in the case, the Examiner is encouraged to contact the undersigned at the number below.

Respectfully submitted,

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